



Civil engineers get the job done with minimal impact on the flying mission.

The 47th Flying Training Wing at Laughlin Air Force Base, TX, conducts specialized undergraduate pilot training for close to 500 U.S. Air Force and allied pilots annually. The wing flies an average 300-350 sorties per day and manages and operates 248 aircraft, the largest fleet in Air Education and Training Command. So what happens when one of Laughlin's runways needs reconstruction? Civil engineers rise to the challenge and get the job done with minimal impact on the mission.

Issues Raised, Solutions Found

The reconstruction project included adjusting taxiway and threshold lights to new elevations, laying new base material, milling the existing asphalt surface, putting down a final surface course of asphalt the full length and width of the runway, and adding runway markings to the new surface. It also required reconstruction of taxiway Echo. Poor drainage led to a design that raised the existing elevation of the taxiway an average 15 inches. After all was said and done, nearly 30,000 tons of hot-mix asphalt was placed during the runway closure period.

Good communication began early in the project design. The Runway Closure Working Group, consisting of pilots, airfield management, safety, environmental and communications personnel and others with an interest in the runway closure, expressed concerns and discussed options with base civil engineering planners. The group's decisions were forwarded to the U.S. Army Corps of Engineers (USACE) to incorporate into the design.

These meetings were critical to the success of this project. Several issues were raised and solutions designed. First, the closing of the runway was a major challenge to Laughlin's mission of training the world's best pilots.

"To accommodate the loss of a runway without losing sorties, special block times were established so that the wing's three aircraft types could share the two remaining runways," said Col John P Hunerwadel, 47th Operations Support Squadron. "Flying started before dawn and continued past dusk each day. Each of the flying squadrons increased the number of jets sent cross-country and made more efficient use of other military and commercial airfields. This allowed T-37s — the aircraft with the least range and highest student load — to

continue operations at Laughlin and nearby Spofford Auxiliary Field almost uninterrupted."

The construction period was initially estimated to take four to five months, but it didn't take long to learn that would be an unacceptable burden to the pilots. Much consideration and pencil sharpening by USACE led to a 61-day maximum runway closure. Three separate phases of work were established to meet that timeline.

Another issue of concern — there was no way to access the work area without crossing an active taxiway. The initial design had the access route crossing at taxiway Alpha, where aircraft often bottleneck prior to take-off. Since there would be thousands of truck and equipment crossings, it was moved from a location that was convenient for the trucks to one that provided the least disruption to the aircraft.

The base entry point of the haul route was another issue. If the trucks came through the main gate, it would disrupt traffic arriving and leaving the base. Using the rear gate would be more convenient for the contractor, but the trucks would pass through base housing. The safety and comfort of base residents prevailed, and the trucks were routed through the main gate.

Taxiway Juliet was to be closed during the construction. The Working Group noted that if this taxiway could remain open, it would reduce congestion at the north end of the two remaining runways. Though there was no practical way to keep taxiway Juliet open throughout construction, a clause was added to the contract limiting closure of the taxiway to 14 days.

Work required at the intersection of taxiways Echo and Golf virtually eliminated the chance of using any of Laughlin's runways once the work commenced until completion. This issue was probably the most challenging faced during the design and construction. All aircraft must cross this intersection either taxiing for takeoff or returning to park, or special aircraft routing is required, including back taxiing on an active runway. If this intersection were closed, pilot training would also have to shut down. The solution required the contractor to work in this area when the airfield was closed for the Christmas through New Year's holiday. The dates were specified in the solicitation, but if the contract had not

been funded and awarded as planned in September 2001, it might have been impossible to do the work during the specified period. HQ AETC and USACE did what was necessary and the project was awarded on time.

The remaining concern was that weather might delay the work past the scheduled closure period. However, thanks in no small part to good luck, the intersection reopened as scheduled when pilot training resumed Jan. 2, 2002.

A Commitment to Success

Like any major construction project there were day-to-day issues that had to be resolved, but the bottom line is Laughlin AFB's runway reopened after only 46 days of reconstruction — 15 days ahead of schedule.

The plan for this \$4 million construction project allowed the contractor 61 days to complete the work before \$12,185 per day in liquidated damages went into effect. It also had a bonus clause that allowed \$10,000 per day for up to 15 days for early completion. The contractor established an aggressive schedule and completed the work 15 days prior to the deadline, collecting a \$150,000 bonus for his efforts. The bonus was actually money well spent. The Air Force (and U.S. taxpayer) would have spent more money in direct cost if the runway had remained closed an equal number of days.

Several things contributed to the successful outcome of this project, including good communication, which led to good planning, good weather (though not perfect), and a total commitment to succeed.

"This project was a great success: a runway completely resurfaced in very short order with minimal loss to the wing's flying mission," said Lt Col Hunerwadel. "A large part of that success was due to the excellent working relationship between Laughlin's Operations Group, Support Group, and the Corps of Engineers. The working groups we established early on were immensely helpful, anticipating most of the problems we later encountered and allowing for a smooth transition between two- and three-runway operations."

Good communication continued once the project moved from design through award to construction. Four key teams of personnel monitored their special interests. USACE managed the technical aspects of the project, insuring the Air Force got a complete and usable facility. The Air Force project manager monitored the schedule and insured issues potentially delaying the reopening were resolved. Laughlin base operations kept an eye on

safety issues including the haul route, foreign object damage control, airfield driver training and equipment movement within the active airfield. The contractor looked ahead to issues needing resolution, requesting information and clarification where needed.

Good weather played an important role as well. Though there were days it rained or was windy, it didn't occur at the most inopportune times, as is often the case. The Air Force, USACE and the contractor can't claim credit for the weather; however, it was discussed during the design. It was agreed to move the runway closure from January to March, anticipating more favorable weather for the work to be done. As it turns out, it was a wise move.



Laughlin's runway 13R-31L reopened after only 46 days of reconstruction — 15 days ahead of schedule. Photo, opposite page, shows paving operations near completion. Above, An aerial view of Runway 13R-31L and Taxiway Echo shortly before completion. Left, paving operations on the first day of laying asphalt. (Photos courtesy 47th CES)



Finally, a total commitment to succeed from all parties involved capped the success. That included HQ AETC, Laughlin, USACE and the contractor and his subcontractors. Total commitment meant getting immediate response to questions and concerns, as well as providing the same when asked.

"The entire 47th FTW to include military, civil service and contractors alike knew how much this was going to impact training," said Billie Jo Williams, airfield manager. "From the many hours of pre-planning efforts, to the late nights spent for setup, through the long days and many weekends of construction and the final inspection, along with some last minute efforts to adjust things as required to support the mission, all involved started with and maintained their focus on the mission. This just shows how diverse the Laughlin community dedication is, which makes me proud to be a part of this flying mission."

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